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Ectocarpus Dietziæ, Harvey, and *E. Hooperi*, Harvey. Unfortunately, the originals of these two species in Herb. Hooper and Herb. Harvey are all sterile, and it is practically out of the question that future algologists should ever be able to recognize them again, there being nothing specifically characteristic in the sterile plants. All that one can say is, that of the two specimens of *E. Hooperi* in Herb. Hooper, one, No. 590, agrees with Harvey's figure in the Nereis in having short spinose ramuli, but No. 55 does not agree at all with the figure. Exactly what either of them is cannot be determined from the original specimens, and *E. Hooperi*, as well as *E. Dietziæ*, should be dropped from the list of known *Ectocarpi*. The original specimen of *Ectocarpus lutosus*, Harvey, from Herb. Hooper, shows that the specimens from Wood's Holl, mentioned in the Marine Algæ of New England, were correctly determined.

Codium tomentosum, Stackhouse.—A specimen of this species is labelled Greenport, L. I., but the locality needs confirmation. This alga is common in many parts of the world, and the New England coast is one of the comparatively few places where it is not known to occur. It appears more probable, seeing how commonly specimens of the species are found in collections, that there is an error in the label than that its presence in Long Island Sound should have escaped the observation of the numerous collectors in that region.

The specimens of *Wrangelia filicina*, Harvey, and *Hypnea Wurdemanni*, Harvey, are to be referred respectively to *Wrangelia penicillata* and *Eucheuma isiforme* as stated in the Nereis. The *Striaria attenuata* of Herb. Hooper is not that species, but *Dictyosiphon fœniculaceus*, Greville, and *Mesogloia multifida* from the same source is *Mesogloia divaricata* Kuetzing.

A Study of Solanaceous Anthracnoses.

The tomato, pepper and egg-plant are three vegetable fruits belonging, as is well-known, to the same family (Solanaceæ) of plants. Two anthracnoses are recorded upon the tomato, namely: *Glœosporium fomoides*, Sacc., and *Colletotrichum Lycoperseci*, Chest. The pepper has two also, *Glœosporium piperatum*, E. & E., and

Colletotrichum nigrum, E. & Hals. Upon the egg-plant are likewise two, the *Glœosporium Melongenæ*, E. & Hals., and a *Colletotrichum*, sp., found by the writer for the first time the past season in the trial plots of a large seed-grower, and, for reasons developed in this paper, remains unnamed as such.

It will be seen that there is a *Glœosporium* and a *Colletotrichum* upon each of the three Solanaceous plants.

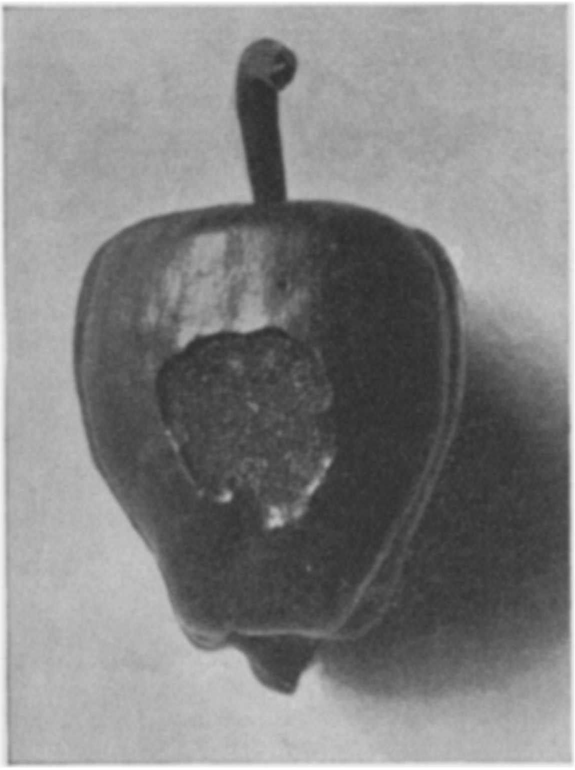
By means of inoculations the *Glœosporium* of the tomato has been made to grow upon the egg-plant, and, what is of more interest, also upon the pear, banana, bean, quince and grape, while there was a mutual exchange effected with the apple; that is, the *Glœosporium fructigenum*, Berk., was successfully transferred to the tomato, as well as the native tomato *Glœosporinm* to the apple when it produced the true ripe-rot.

No attempts were made, from lack of proper virus at the time, to grow the egg-plant *Glœosporium* upon any other fruit. The pepper *Glœosporium*, however, was taken to the banana, pear, grape, persimmon, and a mutual exchange was made with the apple in the *Glœosporium fructigenum*, Berk. We have therefore, the ripe-rot of the apple thriving upon the tomato and the pepper, and it was grown also upon the egg-plant.

By an axiom it would seem to be concluded that the three species of *Glœosporium*, which have no real structural differences, and recorded for the three Solanaceous plants are reducible to one, and that that one is the old and familiar bitter-rot of the apple, namely; *Glœosporium fructigenum*, Berk. Three years ago Miss Southworth, while in the Division of Pathology of the Department of Agriculture, proved in a similar manner that this bitter-rot was identical with an anthracnose of the grape, and because the affected grapes were not bitter, but nearly mature when diseased, the name ripe-rot was proposed. This term is well adapted for the further expansion of the species, and the specific name of *fructigenum* given by Berkeley is almost prophetic.

The accompanying engraving was made from a photograph of one of the inoculations of the pepper ripe-rot germs from the apple. The appearance to the eye of the anthracnosed pepper was quite different from that of the apple, but the condition of flesh texture and character of the skin, etc., were very unlike, which accounted for the more rapid growth in the pepper and the greater shrinking of the diseased area. However the microscopic structures were the same in both and the individual acervuli similar.

Less work was done with the *Colletotrichums* of the three plants under consideration because of lack of virus and of time and opportunity to use it. The *Colletotrichum* of the egg-plant was easily grown upon the pepper. It also thrived upon the bean, producing pod-spots, and in turn the native Pod-spot Fungus (*Colletotrichum Lindemuthianum* S. & M.) was grown upon the egg-plant. This was a direct exchange and carries with it a double weight of proof. The *Colletotrichum* of the bean was grown upon the pear, and the one native to the pear flourished



upon the tomato. This one of the pear and the pod-spot *Colletotrichum* of the bean were at the same time introduced upon different areas of a citron, and the two in growing produced a blending anthracnose blotch made up of a single species of *Colletotrichum*. It is therefore shown that the chain of evidence is strong that all three of the Solanaceous plants are preyed upon by the same *Colletotrichum*, and that it is the one so familiar to truck growers as the pod-spot fungus, namely, *Colletotrichum Lindemuthianum*, S. & M. Whatever differences in appearance upon the various hosts there may be they seem entirely due to the varying conditions which attend the growth of the anthracnose. The microscope is not sufficent to distinguish from which host the fungus has been taken for inspection.

If these cultures give the true relation of the anthracnoses it is evident that the view now held by mycologists may need some modifications to fit the facts. In an economic aspect the information has its value as it shows a close connection between the anthracnoses of the several garden crops. That is, one fruit does not blight to its own kind alone. A decaying tomato or apple is neither its brother's nor its cousin's keeper.

BYRON D. HALSTED.

Two New Species of Mosses from Idaho.

BY J. B. LEIBERG.

(PLATES CXLIII.—CXLIV.)

DITRICHUM MONTANUM n. sp.—Plants cæspitulose, 1–2 cm. in length, fastigiately branching from the base, above more or less dichotomous. Monoicus, seldom synoicus; antheridia terminal on the apex of the basilar branches and of short axillary branchlets, few, without paraphyses; perigonial leaves 3–5, of two sorts, short, serrulate, concave, apiculate, costate, loosely areolate bracts, and longer, broadly costate, canaliculate ones, more compactly areolate, resembling the stem leaves but shorter, the two sorts occurring together, and now the one and now the other enclosing the antheridia.

Stem leaves erect or slightly curved, lanceolate below, channeled and subulate above with a narrow lamina of two to three rows of cells, subserrulate and inflexed margin of two rows of cells, apex coarsely toothed; costa broad, strong, ceasing below